REMARKS

Claims 1-3 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshiyuki et al. (JP 07-128674) and Tsuchiya et al. (U.S. Patent No. 6,575,564 B1). In response, Applicants amended independent claim 1 to clarify that the blowing of the glass against the liquid crystal supply needle occurs after the step of dropping the liquid crystal, and respectfully traverse.

Yoshiyuki is directed to an apparatus for reducing a liquid crystal display element. A container 2 has liquid crystal 11 that is supplied via a stop cock 4 to a dispenser 5. The dispenser 5 supplies the liquid crystal to a substrate 7 upon actuation of plunger/cylinder 6. Yoshiyuki does not disclose or suggest a step of having a gas blown against the liquid crystal supply needle (i.e., the top end of the dispenser 5).

Tsuchiya shows in FIGs. 1 and 3 a nozzle 10a of an ink jet recording apparatus. The nozzle 10a is filled up with a viscous substance 11 (e.g., ink). Tsuchiya teaches that when no voltage is supplied to the recording electrode 12 of the nozzle 10a, then a meniscus 13 is formed so as to project from the forward end portion of the nozzle 10a when the meniscus is formed from a high viscosity substance. When a voltage is applied to the recording electrode 12, the meniscus 13 vibrates so as to extend toward a recording medium 15 and eventually contacts the recording medium, thereby causing data to be formed on the recording medium when the meniscus sufficiently extends. (See col. 6, ln. 62 to col. 7, ln.

11). Thus, the viscosity of the meniscus 13 is reduced by vibrations. (See col. 7, ln. 46 to col. 8, ln. 13).

Tsuchiya further teaches that by heating the meniscus 13 with hot air H (i.e., by blowing hot air H toward the meniscus 13), the viscosity of the meniscus 13 is reduced. This causes the recording characteristic to be improved because a sharp dot can be formed. (See col. 8, lns. 33-58). Although Tsuchiya shows hot air being blown toward the meniscus, Tsuchiya fails to disclose any time period for when the hot air is blown toward the meniscus. In order for the viscosity of the meniscus to be reduced to form a sharp dot, it is necessary that hot air is blown toward the meniscus during the forming of the dot. However, if hot air is blown to the meniscus after the forming of the dot, then the viscosity of the meniscus is reduced, which causes a problem. That is, a problem occurs in that it is difficult to maintain a stable shape of the meniscus, and therefore a stable shape of each of the meniscus drips that pass from the forward end portion of the nozzle to the substrate to create the dots. (See col. 8, lns. 6-9). For this reason, Applicants respectfully believe that Tsuchiya teaches or suggests away from hot air being blown to the meniscus after forming a dot.

In contrast, amended claim 1 now calls for the step of a gas being blown against a liquid crystal supply needle after the step of dropping the liquid crystal. By blowing the gas in this manner, the portion of the liquid crystal that is adhered to the surface of the liquid crystal supply needle falls onto the substrate. That is, the portion of the liquid crystal that causes an error in the supply amount of the liquid crystal in the substrate is removed

from the liquid crystal supply needle, which advantageously allows the liquid crystal to be supplied to the substrate with high precision. (See Applicants' specification pg. 11, lns. 14-21). Since neither Yoshiyuki nor Tsuchiya, taken alone or in combination, disclose or suggest the step of blowing a gas against the liquid crystal supply needle after the step of dropping of the liquid crystal to the substrate, withdrawal of the §103(a) rejection of claims 1 and 3 is respectfully requested.

Claims 1-3 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshiyuki and Kurihara et al. (U.S. Patent No. 6,051,175 A). In response, Applicants traverse the rejection for the reasons recited above with respect to the §103 rejection based on Yoshiyuki and Tsuchiya.

As discussed above, Yoshiyuki fails to disclose or suggest a step of blowing a gas against the liquid crystal supply needle. Kurihara also fails to disclose or suggest this feature for the following reasons.

As shown in FIGs. 1-3 of Kurihara, a nozzle 3 of a spinning apparatus 2 is provided for making yarn. The nozzle 3 is filled with a melt of a thermotropic liquid crystal polymer 1. In Kurihara, as discussed in col. 4, ln. 52 to col. 5, ln. 5 and col. 9, lns. 8-14, for example, a problem occurs wherein a draft ratio of the filament cannot be made high by holding the filament spun right under the nozzle at a high temperature. (See col. 1, ln. 65 to col. 2, ln. 14 and col. 10, lns. 13-22). By blowing hot air of high pressure 5 to the filament spun right under the nozzle 3, the filament can be held at a high temperature, and thus the

draft ratio of the filament can be made high. (See FIGs. 2A, 3 and col. 22, ln. 61 to col. 23, ln. 8). Moreover, the draft tension can be imparted to the filament. (See col. 10, ln. 60 to col. 11, ln. 1). Thus, Kurihara discloses that hot air of high pressure is blown to the filament spun right under the nozzle. However, Kurihara does not disclose any timing periods teaching when hot air of high pressure is blown toward the filament.

In Kurihara, in order to make the draft ratio high, it is preferable to blow hot air of high pressure toward the filament during the melt of the filament as it is extruded through the nozzle. If hot air of high pressure is blown toward the filament after the melt of the filament (i.e., when the filament is finished (or stopped) from extruding through the nozzle 10), then the hot air would not make the draft ratio of the filament high or impart a draft tension in the filament. In other words, there is no necessity for hot air of high pressure to be blown to the filament after the melt of the filament is extruded through the nozzle. For these reasons, Applicants respectfully submit that Kurihara teaches (or suggests) away from hot air of high pressure being blown to the filament after the melt of the filament is finished or stopped from extruding through the nozzle. Accordingly, since both Yoshiyuki and Kurihara fail to disclose or suggest blowing a gas against a liquid crystal supply needle after the step of dropping a liquid crystal, withdrawal of the §103(a) rejection of claims 1 and 3 is respectfully requested.

For all of the foregoing reasons, Applicants submit that this Application is in condition for allowance, which is respectfully requested. The Examiner is invited to contact the undersigned attorney if an interview would expedite prosecution.

Respectfully submitted,

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November 30, 2005

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